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Building & Highway Material Testing Laboratory

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No.: CTCE/BBMP/W.No.08/BBU/WMM/Gradation/2016-17 10.01.2017

TEST REPORT ON GRADATION OF WET MIX MACADAM

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS 2386 (part-1)1963 (RA-2016)
Date of Testing	:	10.01.2017

Oven Dry Wt (gm): **5000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits As per Morth Table 400-11
53	0	0	0	100	100
45	185	185	3.7	96.3	95-100
22.4	1590	1775	35.50	64.50	60-80
11.2	950	2725	54.50	45.50	40-60
4.75	615	3340	66.80	33.20	25-40
2.36	600	3940	78.80	21.20	15-30
0.600	450	4390	87.80	12.20	8-22
0.075	380	4770	95.40	4.60	0-8

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/W.No.08/BBU/WMM/AIV/2016-17 10.01.2017

TEST REPORT ON IMPACT VALUE OF AGGREGATE

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Wet Mix Macadam
Technical Reference	:	IS: 2386 Part IV
Date of Testing	:	10.01.2017

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	80	81	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	306	
4	Aggregate Impact value = percent fines 100* (W2/W1)%	20.78	20.93	**20.85**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.08/BBU/WMM/Shape.T/2016-17 10.01.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

* **Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* **Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* **Name of Work**	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
* **Reference**	:	BBMP/EE/BTP/WO/ /2016-17
* **Sample ID**	:	Wet Mix Macadam
Technical Reference	:	IS 2386(Part 1) 1963 (RA 2016)
Date of Testing	:	10.01.2017

Sl.No.	Description	Result
1	Flakiness Index	12.92%
2	Elongation Index	13.27%
3	Combined Flakiness & Elongation Index	26.19%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.08/BBU/BC/AIV/2016-17 16.01.2017

TEST REPORT ON IMPACT VALUE OF AGGREGATES

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
*** Name of Work**	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
*** Reference**	:	BBMP/EE/BTP/WO/ /2016-17
*** Sample ID**	:	Hot mix plant, Bangalore.
*** Type of Mix**	:	Bituminous Concrete
Technical Reference	:	IS: 2386 (Part- 4)-1963 (RA-2016)
Date of Testing	:	16.01.2017

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	78	79	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	303	
4	Aggregate Impact value = percent fines 100* (W2/W1) percent	20.58	20.68	**20.63**

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/W.No.08/BBU/BC/Shape.T/2016-17 16.01.2017

TEST REPORT ON FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
*** Name of Work**	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
*** Reference**	:	BBMP/EE/BTP/WO/ /2016-17
*** Sample ID**	:	Hot mix plant, Bangalore
Technical Reference	:	IS 2386 (Part 1) 1963 (RA 2016)
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	16.01.2017

Sl.No.	Description	Result
1	Flakiness Index	12.90%
2	Elongation Index	13.85%
3	Combined Flakiness & Elongation Index	26.75%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.08/BBU/BC/Stripping/2016-17 16.01.2017

TEST REPORT ON STRIPPING VALUEOF ROAD AGGREGATES (STATIC IMMERSION TEST)

*** Customer**	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
*** Agency**	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
*** Name of Work**	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
*** Reference**	:	BBMP/EE/BTP/WO/ /2016-17
Technical Reference	:	IS: 6241
*** Type of Mix**	:	Bituminous Concrete
Date of Testing	:	16.01.2017

Type of binder : 60/70
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.3	3.40	96.60
2	3.4		
3	3.5		

*Information is furnished by the Customer/Representative.

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

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Job No.: CTCE/BBMP/W.No.08/BBU/BC/Sp_Wa/2016-17 16.01.2017

TEST REEPORT ON SPECIFIC GRAVITY AND WATER ABSORPTION

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Hot mix plant, Bangalore
Technical Reference	:	IS: 2386 (Part 3) 1963 (RA-2016)
* Type of Mix	:	Bituminous Concrete
Date of Testing	:	16.01.2017

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2000	2001	2002	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1239	1238	1247	
4	Weight of saturated surface dry aggregate in air	W_3 g	2011	2012	2013	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	772	774	766	
6	Weight of oven dried aggregate	W_4 g	1996	1995	1996	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.585	2.578	2.606	2.590
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.637	2.635	2.665	2.646
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.75%	0.85%	0.85%	0.82%

*Information is furnished by the Customer/Representative.

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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Job No: CTCE/BBMP/W.No.08/BBU/BC/Bitumen/2016-17 16.01.2017

TEST REPORT ON BITUMEN CONTENT OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Roads in Defence colony CQUAL Layout and surrounding area, BBMP, Bangalore.
Technical Reference	:	IRC:SP:11-1984
Date of Testing	:	16.01.2017

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469.5	469.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	30.5	30.50
7. Bitumen content in %	6.10	6.10
8. Average	**6.10**	

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Job No: CTCE/BBMP/W.No.08/BBU/BC/Bitumen/2016-17 16.01.2017

TEST REPORT ON BITUMEN CONTENT AFTER GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

* Customer	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
* Agency	:	**Mr. B.B. Umesh,** #385, Bettahalasur (P), Bangalore North Taluk.
* Name of Work	:	Patching potholes in main and cross roads of Sahakaranagara B, C and D Block Defence colony CQUAL Layout and surrounding areas in Ward No.08, BBMP, Bangalore.
* Reference	:	BBMP/EE/BTP/WO/ /2016-17
* Sample ID	:	Roads in Defence colony CQUAL Layout and surrounding area, BBMP, Bangalore.
Technical Reference	:	IS 2386 and IRC:SP:11-1984
Date of Testing	:	16.01.2017

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	35.19	7.50	7.50	92.50	79-100
9.5	35.15	7.49	14.98	85.02	70-88
4.75	69.35	14.77	29.75	70.25	53-71
2.36	70.25	14.96	44.72	55.28	42-58
1.18	56.36	12.00	56.72	43.28	34-48
0.6	58.12	12.38	69.10	30.90	26-38
0.3	41.25	8.79	77.88	22.12	18-28
0.15	35.16	7.49	85.37	14.63	12-20
0.075	42.15	8.98	94.35	5.65	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	34.18	7.28	7.28	92.72	79-100
9.5	45.15	9.62	16.90	83.10	70-88
4.75	66.39	14.14	31.04	68.96	53-71
2.36	68.12	14.51	45.55	54.45	42-58
1.18	63.13	13.45	58.99	41.01	34-48
0.6	55.12	11.74	70.73	29.27	26-38
0.3	36.33	7.74	78.47	21.53	18-28
0.15	30.12	6.42	84.89	15.11	12-20
0.075	38.25	8.15	93.03	6.97	4-10

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